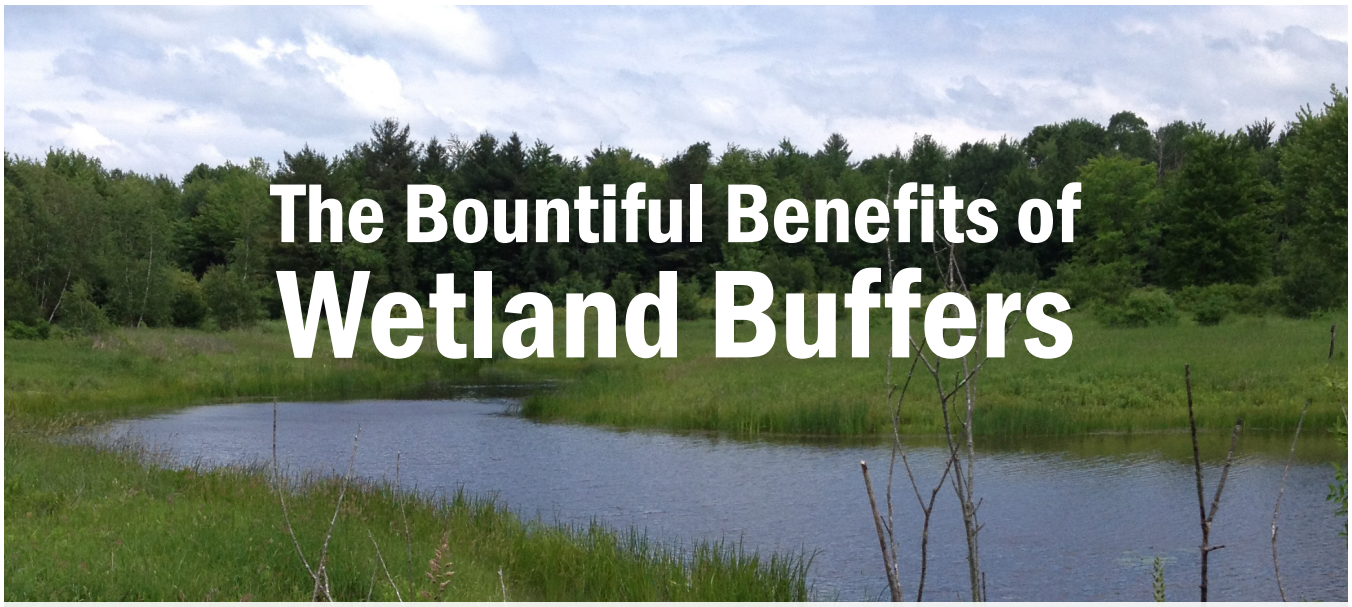
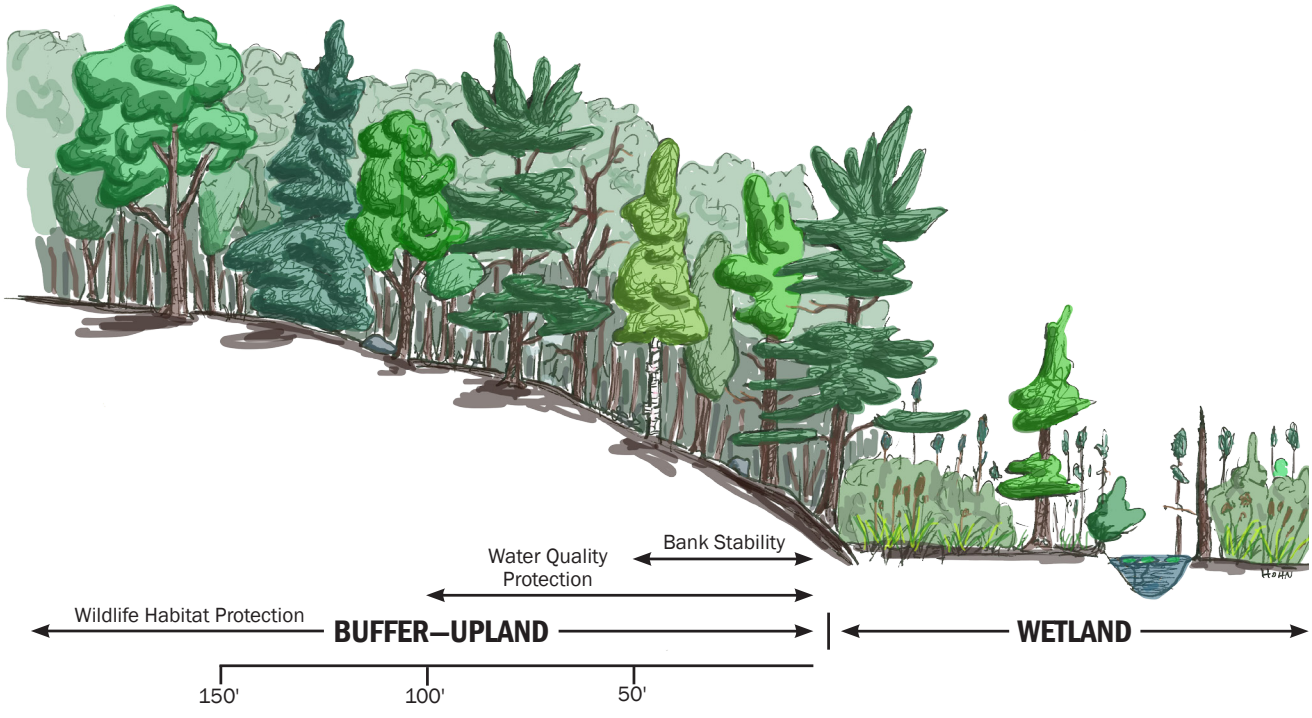


# The Bountiful Benefits of Wetland Buffers

Vermont is known for its scenic landscapes and waterways, and for its strong cultural connection to the land. Wetlands are among the most striking of Vermont landscapes and also provide other vital functions and values. These include habitat for fish, wildlife, and plants (including rare species); flood control; water quality protection; and aquifer recharge. However, to maintain a wetland's health, the surrounding drier upland area is needed to protect the wetland from outside disturbance. This protective shield is known as a buffer.

## WHY ARE BUFFERS IMPORTANT?

In natural conditions, wetlands in Vermont are surrounded by upland ecosystems—usually forests. When development or disturbance occurs in this protective forest shell, impacts can spread to the wetland ecosystem as well. Ecologists refer to these effects as edge effects. Edge effects can extend for at least 300 feet, but decrease with distance, so preserving a wide buffer offers more protection to a wetland than a narrow one.



A diverse, undisturbed natural forest offers a great deal of protection to the wetland it surrounds—and the wider it is, the better. A disturbed buffer will need to be wider to offer the same benefits as a healthy buffer. Other factors, such as slopes prone to erosion, also require a wider buffer, and wider buffers allow wetlands to be used by reclusive animals like bobcats. Healthy buffers give us clean water and diverse wildlife. The following list explains some of the different benefits buffers bring to wetlands and you.

### Buffers Filter Sediments

Wetlands provide the important function of filtering sediment out of stormwater, but they can also be damaged by too much sediment. Just as with engineered water filters, a screen or grate to keep out coarse debris greatly increases the function of the much finer filter behind it. Buffers act as this screen. A healthy forested buffer will filter water and remove much of the heavier sediment before it enters the wetland, allowing the wetland to more effectively filter suspended silt and clay from the stormwater. Forests with deep layers of leaf litter and an abundant native understory will remove sediment most effectively. Landscaped areas and croplands are much less effective at filtering sediment from stormwater. Increasing forested wetland buffers in a watershed can improve water quality by filtering sediment before it reaches surface waters.

Buffers help filter out sediment and pollutants before they reach lakes and streams, which benefits fish, wildlife, and people.

### Buffers Remove Excess Nutrients

The vegetation and soils of natural buffer areas help remove excess nutrients from surface runoff. These nutrients act as fertilizer, but just like in your garden, too much fertilizer can cause lots of damage. A healthy forest will absorb excessive phosphorus and nitrogen that otherwise might overwhelm the wetland, causing water pollution and increasing the populations of algae and invasive plants. Some special wetland types, such as bogs, contain species adapted to low nutrient levels and can be significantly damaged by excess nutrients. Increasing forested wetland buffers in a watershed can improve water quality by filtering sediment before it reaches surface waters.

### Buffers Protect Wildlife from Edge Effects

A buffer is essential protection for species that use wetland habitat. Some wetland scientists call wetlands biological supermarkets because they provide so much food for wildlife. Nearly every animal species in Vermont uses wetlands for habitat or has food that relies on wetlands.

Much as you likely require a house with walls, many animals need habitat that offers cover from human disturbance. Some animals are more tolerant of disturbance than others, but bobcats carefully avoid any contact with humans. Black bears have similar requirements. The Vermont Fish and Wildlife Department recommends buffers of a quarter mile for wetlands that provide important black bear habitat. And as a general rule, most mammals and breeding birds need a buffer of 100 to 600 feet to be able to fully use the wetland as habitat.

### Buffers are Habitat for Species that need both Wetland and Upland

Some species need both wetland and upland to survive. Many amphibians require wetlands for summer habitat, but need drier upland soil to burrow in for winter hibernation, often traveling 600 to 1,000 feet to find this habitat. Development or disturbance on the edge of a wetland may obstruct their movement, causing them to disappear from both the wetland and upland habitat. Additionally, upland

buffers may provide habitat between wetlands, allowing species to travel from one wetland to another.

### Buffers Offer Protection from Invasive Species

Invasive species are plants and animals that invade natural areas, choking out or killing native species. Invasives are one of the most serious threats to Vermont's natural habitats, and can cause many problems for people living in the state. Most invasive species spread quickly in disturbed areas, but spread much slower in undisturbed habitat. A healthy buffer can help keep invasive species out of a wetland, in the same way that your skin protects your body from infections. Even a small break in the buffer, like a cut in your skin, can allow invasive species to enter, then spread throughout a wetland.

### Buffer Trees Benefit Adjacent Wetlands

Some wetland types, such as vernal pools and marshes, naturally lack trees. Native forest growing on dry land nearby offers shade and more diverse habitat for the adjacent wetland. The dropped leaves provide crucial habitat for insects that form the base of the food chain. When trees fall into the wetland, they provide important habitat for many species—for instance, basking sites for turtles. These animals may not be able to use planted landscape trees in the same way, especially non-native trees, which they are not adapted to use.

### Buffers Reduce the Effects of Floods and Droughts

Everyone is familiar with the sights and sounds of full rain gutters and water flowing rapidly across roads and parking lots. In developed areas, water cannot soak into the ground, and instead rushes over land and into waterways, making floods much worse than they would otherwise be. Since the water does not soak in, it also means there is less groundwater feeding streams, lakes, and wells during times of dry weather. Wetlands reduce the harmful effects of both floods and droughts, but their impact is lessened without a surrounding buffer to help slow water flowing into them.

Buffers allow storm waters to soak into the ground before they reach rivers, reducing flood damage downstream.

Wood frogs (*Lithobates sylvaticus*) require large forested buffers near their wetland breeding pools (vernal pools) for migration and habitat.

### Buffers Protect Wetlands from Direct Human Impacts

Sometimes people damage wetlands directly by dumping garbage or driving vehicles in them, or by harassing wildlife, either intentionally or unintentionally. A healthy forest surrounding a wetland greatly decreases the chances of this happening. Landowners may also want to install fences, boulders, gates, or other obstacles on the outside edge of the buffer to prevent these potential impacts.

### Buffers are Beautiful!

The aesthetic value of wetlands is greater when forested buffers screen views and sounds of nearby buildings, roads, and parking lots. Forested wetland buffers in your community allow you and your friends and family to enjoy paddling, birdwatching, hiking, or just spending time in wetlands.

## THIS SOUNDS GREAT! HOW DO I IMPROVE MY BUFFER?

So you've got a wetland—congratulations! You have a valuable watershed feature that helps keep waters clean, wildlife abundant, and Vermont a great place to live. You care about protecting your wetland, but now that you know about buffers, you may recognize your wetland needs a better buffer!

The good news is that buffers can be restored. In some cases, this is as simple as discontinuing mowing or brush cutting—native forests readily grow in Vermont if

you allow them the space to do so. If there are invasive species in your area, you should remove them from the recovering buffer, as they may prevent the growth of native trees or reduce the quality of your buffer.

If you would like a more hands-on approach or want the wetland buffer to regrow more quickly, you can plant native trees. The restoration of regulated buffer areas via passive regrowth and tree planting do not need a permit. There are a number of Vermont nurseries that carry native trees, shrubs, grasses, and wildflowers that are aesthetically pleasing and benefit wildlife. The nursery can help you decide which plants are best for your buffer. A statewide listing of nurseries that carry native upland and wetland plants is available from the Watershed Management Division.

Please contact Wetlands Program staff if you have questions about your wetland or would like to do work in a wetland or buffer zone protected under the Vermont Wetland Rules (see below, right).

**dec.vermont.gov/watershed/wetlands**
**(802) 490-6100**

A recently planted wetland buffer will grow and provide the many benefits described in this booklet.


**State Protected Buffer Zones**

In Vermont, a limited buffer zone for significant wetlands is regulated through the Vermont Wetland Rules. While these buffer zones provide protection and support for the associated wetlands, in most cases, a larger buffer benefits the resource and associated functions.

For Class II wetlands, which include most of the wetlands protected under the Wetland Rules, a standard buffer zone of 50-feet is regulated along with the wetland. For Class I wetlands, the standard buffer zone is 100 feet wide with some as wide as 300 feet. This means that many activities in wetlands and buffers need to be permitted by the Vermont Wetlands Program.